

# Summary Report: Klamath Bird Observatory's 2008 Long-term Constant Effort Monitoring Station Efforts in the Klamath-Siskiyou Bioregion

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Cover photographs, from left to right: Yellow Warbler adult male in breeding condition with enlarged cloacal protuberance; Yellow Warbler fledgling; Swainson's Thrush adult female in breeding condition with vascularized incubation patch (all KBO file).



## **Summary Report: Klamath Bird Observatory's 2008 Long-term Constant Effort Monitoring Station Efforts in the Klamath-Siskiyou Bioregion**

by Robert I. Frey, Jaime L. Stephens, and John D. Alexander

### **Background**

Klamath Bird Observatory (KBO) continued its comprehensive, long-term bird monitoring program in the Klamath-Siskiyou Bioregion in 2008. The objectives of this program are to collect data that provide an index to species diversity and abundance in riparian and upland habitats, to evaluate the reproductive success and population health of Neotropical migratory and resident birds, and to maintain a long-term monitoring effort for tracking landbird population trends.

The Klamath-Siskiyou Bioregion lies within the Partners in Flight (PIF) Pacific and Intermountain West Avifaunal Biomes. Our monitoring efforts are conducted within several habitat types of which PIF describes 45 focal species for which conservation and monitoring efforts should be targeted (Altman 1999, 2000, CalPIF 2002, RHJV 2004, Rich et al. 2004; Tables 1a-1c). KBO's monitoring efforts are a major component of the Klamath Bird Monitoring Network, a regional program established in 1992 (Alexander et al. 2004). KBO works with the US Forest Service Redwood Sciences Laboratory and partners in the Klamath-Siskiyou Bioregion to fulfill monitoring goals defined by the National PIF Inventory and Monitoring Working Group (Hussell and Ralph 1998, Rich et al. 2004) and Oregon-Washington (Altman 1999, 2000, Altman and Bart 2000) and California PIF (CalPIF 2002, RHJV 2004) recommendations.

As a part of KBO's long-term monitoring program, we maintained efforts to track population trends and demographics with constant effort mist netting stations, breeding bird survey routes and extensive point count survey routes throughout the Bioregion. KBO continued development of its role as a support source for regional research and monitoring projects by providing technical assistance, training, and consultation to cooperating individuals, organizations, and agencies. This report provides a summary of 2008 constant effort mist netting station efforts, technical training, nocturnal bioacoustical monitoring, and banding-associated outreach and education efforts. KBO's long-term monitoring point count efforts are documented in a separate report (Stephens and Alexander 2009).

### **Monitoring at Constant-Effort Stations**

KBO's long-term mist netting efforts are designed to provide distribution, abundance and demographic information. The methods are described in Ralph et al. (1993, 2004) and include mist net arrays, banding, area search and point count survey, vegetation survey, and soft tissue sampling (for DNA, stable isotope study and avian influenza monitoring). KBO conducted integrated bird monitoring accordant to constant-effort station (CES) methodology at 17 CES sites in 2008.

We continued efforts at 11 CES sites that have been operated for 10 years or more, two sites operated six to seven years, and four sites operated three or fewer years. The Antelope Creek site on the Klamath National Forest was again operated as a CES following an interruption in 2007. In April, a new CES site was established at the Jefferson Nature Center at the southern edge of Medford along Bear Creek. The Jefferson Nature Center and Willow Wind Community Learning Center sites were operated before and after the breeding and fall migration seasons, which provided KBO with valuable community volunteer training, environmental education and public outreach opportunities (see *Technical Training* and *Outreach and Education Integrated with Banding Efforts* below). Monitoring efforts outside the breeding and fall migration seasons at these sites also provided early and late arrival and winter resident information for migratory species in southern Oregon's Rogue Valley. All CES sites were scheduled at the onset of the landbird breeding season in Oregon, varying by altitudinal location, and continued into October, inclusive of the fall migration.

Each CES effort was scheduled for the five hours following sunrise (with the exception of the Wildlife Images CES scheduled for six hours). Exact locations of the study sites were recorded in KBO's GIS database and the physical characteristics for each site described using a location and vegetation relevé survey method recommended by Ralph et al. (1993). A mist netting and bird banding public demonstration was conducted as part of an International Migratory Bird Day festival in Klamath Falls. Detailed descriptions of all site localities are included (Table 2).

Combined captured totals from the 18 locations include 11,101 birds of 98 species, including four subspecies, captured during 16,539.4 net hours (number of 12 meter mist nets operated multiplied by time operated in hours). During the 322 banding efforts, 641 area search surveys were completed with 1,051 person-days (Tables 3a, 4a). The methods used gathered distribution, abundance, and/or demographic information for these species, including many identified by PIF in continental and regional habitat conservation plans as priority or focal species (Altman 1999, 2000, CalPIF 2002, RHJV 2004, Rich et al. 2004; Table 1a-1b). Point count surveys were also conducted at CES sites during the breeding season (Stephens and Alexander 2009).

KBO's long-term monitoring CES efforts were conducted in a variety of habitat-types; however, in the interest of a clearer presentation, we have synthesized our effort results into two broadly distinct landscapes, *Eastside Cascades Range and Klamath Basin* and *Westside Cascades and Klamath Ranges*, from the overall totals in this report. Site-specific habitat descriptions are available upon request.

### ***Eastside Cascade Range and Klamath Basin***

From May through August (breeding season), all nine Eastside Cascades Range and Klamath Basin CES stations were scheduled once every 10-day period (Period 1 beginning 1 May). In September and October (migration season), all CES sites were scheduled and operated once per week, except for the Rocky Point Cabin station which was scheduled for an increased effort frequency of thrice weekly.

At the nine eastern CES sites and the single public demonstration effort a total of 6,121 birds were captured in 7,849.7 net hours between May and October (Table 3a). A total of 288 area search surveys were conducted during the 151 banding efforts with 502 person days. The Rocky Point Cabin site had the highest total captures, with a greater number of net hours than the other eastern sites. Rocky Point Cabin and the Frain Ranch Campground sites had the highest capture rate (captures per net hour). The Antelope Creek site had the greatest average species richness (average species captured per visit over the season). The Veteran's Park demonstration effort was not compared to the CES site efforts.

During the breeding season, a total of 3,114 birds were captured during 4,480.2 net hours (Table 3b). A total of 165 area search surveys were completed during 87 efforts with 305 person-days. The Frain Ranch Campground site had the highest total captures. The Frain Ranch Campground and Antelope Creek sites had the highest capture rate. Antelope Creek had the greatest average species richness.

During the fall migration season, a total of 3,007 birds were captured during 3,369.5 net hours (Table 3c). A total of 123 area search surveys were completed during 64 efforts with 197 person-days. The Rocky Point Cabin site had the highest total captures, capture rate, and the greatest average species richness.

Several unusual species were encountered at Eastside Cascades and Klamath Basin sites during CES efforts. On 24 June, a Northern Waterthrush was captured at the Antelope Creek site, determined to be a second-year (hatched in 2007) of unknown sex. The Northern Waterthrush is considered a rare breeding and otherwise vagrant species in Oregon (Contreras 2003). A Chestnut-sided Warbler was captured 1 August at the Frain Ranch Campground site determined to be an after-hatching-year male. This individual was recaptured at the same site on 22 August. The Chestnut-sided Warbler is considered transient in Oregon (Nehls 2003a). A Hooded Warbler was captured 22 August at the Williamson River Campground site, determined to be a hatching-year (hatched in 2008) of unknown sex. The Hooded Warbler is considered transient in Oregon (Nehls 2003b). On 11 September, another Northern Waterthrush, determined to be a hatching-year of unknown sex, was captured at Williamson River Campground. On 6 October, an Indigo Bunting was captured at the Rocky Point Cabin site, determined to be an after-hatching-year male. The Indigo Bunting is considered transient, with just five previous fall records in Oregon (Nehls 2003c).

### ***Westside Cascades and Klamath Ranges***

From May through August (breeding season), all eight western CES sites were scheduled once per 10-day cycle (Period 1 beginning 1 May). The Quines Creek and Wildlife Images sites had an increased frequency of efforts scheduled for the fall migration season. Beginning the third week of August through the second week of October, the Quines Creek site was scheduled twice per week. Beginning 1 September, the Wildlife Images site was scheduled once per three-day cycle through October. All other sites were scheduled once per week September through October. The Jefferson Nature Center site was scheduled weekly in April and monthly in November and December. The Willow Wind site was scheduled weekly in January through April and thrice monthly in November and December.

At the eight western CES sites through the overall season, a total of 4,980 birds were captured in 8,689.7 net hours (Table 4a). A total of 353 area search surveys were conducted during the 171 banding efforts with 549 person days. The Wildlife Images station had the highest total captures, with a greater number of net hours than all but the Willow Wind site. Wildlife Images had the greatest average species richness. The Horse Creek Meadow site had the highest capture rate.

During the breeding season, 1,774 birds were captured in 3,835.7 net hours (Table 4b). Area search surveys conducted totaled 163 during the 84 banding efforts with 256 person-days. Wildlife Images had the highest total captures and the greatest average species richness. Horse Creek Meadow had the highest capture rate.

During the fall migration season, a total of 2,387 birds were captured during 3,806.7 net hours (Table 4c). Area search surveys conducted totaled 145 in 76 banding efforts with 223 person-days. The Wildlife Images site, with the increased effort frequency, had the highest total captures. The Jefferson Nature Center site had the greatest average species richness. Horse Creek Meadow had the highest capture rate.

The most unusual species encountered at CES efforts in the Westside Cascades & Klamath Ranges area was a Northern Waterthrush captured 11 September at the Oregon Caves National Monument station. This bird was determined to be a hatching-year (hatched in 2008) of unknown sex. This was the first record of this species within the Monument. Several banded birds of year-round resident species were captured at one of the three Rogue Valley sites on Bear Creek (i.e., North Mountain Park, Jefferson Nature Center, and Willow Wind) and subsequently recaptured at another. These species included Bewick's Wren, Black-capped Chickadee, Song Sparrow, and Spotted Towhee.

## **Tissue Sampling**

### *Neotropical Migratory Bird Conservation Genetics and Stable Isotopes Project*

Since 1999, KBO has contributed to the University of California, Los Angeles Center for Tropical Research's (CTR) Neotropical Migratory Bird Conservation Genetics and Stable Isotopes Project. The CTR is investigating the genetic structure of migratory bird populations in order to connect breeding areas in North America with wintering areas in Latin America and the Caribbean. This field of research seeks to determine the factors responsible for population declines of Neotropical songbirds that migrate between the Caribbean, Central America, Mexico, and North America. Using molecular genetic techniques (utilizing genetic material and stable isotopes obtained from a single feather from a bird), CTR researchers have been able to identify the breeding and wintering populations of songbirds. The CTR's findings will provide conservation biologists with the means of correlating habitat changes with the declining populations. Demographic data contributed by KBO and other monitoring programs are integral to the CTR's research efforts. In 2008, KBO collected and contributed just over 2,500 feather samples to this project.

### *Avian Influenza Sampling*

In 2008, KBO contributed to international efforts to collect samples of avian influenza to identify transmission paths in North American migratory birds. Information derived from the samples will also be used to further the goal of developing Influenza A vaccines. Avian viruses are present within a bird's cloaca and are relatively simple to safely collect by swab insertion. The swab samples of skin cells and fecal matter are stored in a preservative, labeled and shipped to the CTR for processing and analysis. These efforts are coordinated by CTR in partnership with the Institute for Bird Populations' Monitoring Avian Productivity and Survivorship (MAPS) program and the Landbird Monitoring Network of the Americas (LaMNA). KBO met sampling goals set by the MAPS and LaMNA efforts with 1,000 birds sampled.

### *Cascades-Siskiyou National Monument Avian Migrant-Resident Populations Study*

In 2008, KBO initiated a study of regional altitudinal migration using stable isotopes. Isotopic ratios of carbon, hydrogen and deuterium in inert keratin tissues of feathers and toe-claw samples can be indicative of the location where these tissues were grown. We hope to use isotope analyses to determine if birds that winter in the Rogue Valley breed in our surrounding mountains, as opposed to areas towards the north. We collected paired feather and claw samples from all age-sex classes of the wintering species Hermit Thrush, American Robin, Audubon's Yellow-rumped Warbler, Song Sparrow, Oregon Dark-eyed Junco, and Red-winged Blackbird at sites above snow-line and below snow-line proximate to the Cascade-Siskiyou National Monument. With sampling continuing at sites below snow-line through the winter, 229 samples were collected in 2008.

### **Bioacoustical Monitoring**

In August, KBO expanded the scope of our regional collaboration with the Redwood Sciences Laboratory, establishing bioacoustical monitoring stations in the Klamath-Siskiyou Bioregion, implemented in cooperation with the Cornell University's Laboratory of Ornithology and the Carnegie Museum of Natural History's Powdermill Nature Reserve. Most songbirds migrate at night and many species emit short audible flight notes during their active nocturnal migrations. Recordings of these notes have been used to identify and enumerate the birds flying overhead, providing another tool for monitoring populations of migratory birds. By integration and calibration of banding and bioacoustical data, it is hoped that more precise and accurate patterns of migration at a range of spatial scales can be described.

The bioacoustical monitoring stations consist of sensitive microphones, installed in weatherproof housing, connected to computers running acoustic recording software. The recording devices were operated all night this fall at the Sevenmile Guard Station site in the Klamath Basin and at KBO's Willow Wind office in Ashland. The Redwood Sciences Laboratory established recording devices at three sites in Trinity and Humboldt counties within the Klamath Bird Monitoring Network. The recording devices were operated mid-August through late-October/early-November, inclusive of the migration season in the region.

## **Technical Training**

In 2008 KBO continued providing technical training in bird banding methods and bird conservation outreach and education opportunities at CES sites. KBO's monitoring program has always been integrated with our bird banding internship program, providing specialized training in the latest and most effective bird monitoring techniques for students and biologists. In addition to this on-going instruction, KBO has provided intensive bird banding techniques training at these sites during monitoring efforts for volunteers and professionals from the community, academia, and land management agencies.

In 2008, a total of 15 intern students, including eight international students, received experiential instruction in advanced bird banding and survey techniques. The instruction is supplemented with study materials, published by the North American Banding Council, pertinent scientific literature, and regular seminars presented by KBO staff. Our international internship program is made possible through our partnerships with the Ashland Rotary Club, the Southern Oregon University International Studies Program, the Spain Ministry of Science & Education INTEGRANTS Program, the US Forest Service International Program, and the National Park Service Park Flight Program. This year, KBO hosted student interns of four continents from Canada, Colombia, Ethiopia, and Spain, as well as seven recent college graduates from the United States. We also provided experiential training in banding techniques during monitoring efforts at CES sites to partnering biologists and volunteers. Visiting biologists from Bandelier National Park and Oregon Caves National Monument, and a biology teacher from the Gilman School received intensive banding techniques training in the field. These professional-level training sessions totaled 33 person days.

A banding techniques workshop was presented in July for Klamath Bird Monitoring Network cooperators and other regional researchers at KBO's Upper Klamath Lake Field Station. Participants received instruction in advanced landbird ageing and sexing techniques, standard biometrics, mist net use and maintenance, outreach and education communication skills, and general field safety principles. The workshop was attended by 22 individuals.

In a celebration of community cooperation, KBO welcomed the contributions of several local volunteers of 23 person days assisting at Ashland-area stations while receiving training in banding skills. These individuals were especially involved in the winter months' operation of the WIWI station.

Toward the fulfillment of the North American Banding Council (NABC) mission of promoting sound and ethical banding principles and techniques, KBO coordinated two individual NABC Bander certification evaluation sessions and contributed to a group session in partnership with the Redwood Sciences Laboratory and at the Humboldt Bay Bird Observatory, in Arcata, California. From these evaluations, nine of our interns were certified at the NABC Bander level, with one also certified at the Bander Trainer level.



## **Outreach and Education Integrated with Banding Efforts**

The continuing monitoring efforts conducted by KBO have created many effective outreach and education opportunities that have reached hundreds of students, as well as many community members and KBO-partner representatives. KBO's overall education and outreach accomplishments are reported separately (Dayer 2009, Dayer et al. 2009).

Bird banding provides a unique opportunity to educate the public and students about birds, their environment, and the connection between science and conservation. In 2008, KBO continued to offer academic and public outreach opportunities in concordance with long-term monitoring efforts. Overall, over 1,200 people visited our banding sites during field trips, bird-walks, and demonstrations at CES sites and public parks. The Jefferson Nature Center, North Mountain Park, and Willow Wind sites were especially active as readily accessible outdoor classrooms and laboratories. School and community group outreach programs and presentations were scheduled at these sites. These involved 1,190 Kindergarten through 12th-grade students and teachers from regional schools participating in KBO's Songbirds, Science, and Schools program (Dayer et al. 2009). Public banding demonstrations during KBO-hosted bird walks and other outreach events resulted in 129 visitors at banding efforts. On 23 July, KBO biologists and interns hosted a Mt. Hood Community College class of exchange biology students from several Central America countries. Discussion topics included bird capture, age- and sex-determination, and survey techniques, as well as use of such data to inform conservation and land management.

As part of the International Migratory Bird Day annual festivals at Ashland and Klamath Falls, KBO held public banding demonstrations 10 May. The Ashland demonstration was conducted at the North Mountain Park site. The Klamath Falls event was conducted at the City of Klamath Falls' Veteran's Park (Table 3c). Both of these events were well attended (Dayer 2009). KBO interns assisted Lava Beds National Monument biologists during a bird banding demonstration at the Tule Lake Migratory Bird Festival 17 May.

## **Conclusion**

Klamath Bird Observatory's long-term bird monitoring program utilizes multiple methods, at a landscape level, to monitor bird populations during the breeding and fall migration seasons. Integral components of this monitoring program are technical training and outreach efforts. Our program includes lands that are managed by the U.S. Department of Agriculture (USDA) Forest Service, U.S. Department of Interior (USDI) Bureau of Land Management, USDI Fish and Wildlife Service, USDI Bureau of Reclamation, USDI National Park Service, and others. Data resulting from these efforts are contributed to several databases including the U.S. Geological Survey North American Bird Banding Laboratory, Institute for Bird Populations' Monitoring Avian Productivity and Survivorship program, Klamath Bird Monitoring Network, Landbird Monitoring Network of the Americas, University of California Los Angeles Center for Tropical Research's migratory bird genetics and avian influenza projects, Carnegie Museum of Natural History Powdermill Nature Reserve Bioacoustical Monitoring Program; and Cornell Laboratory of Ornithology's Avian Knowledge Network and Ebird program.

We are collecting data on population trends, habitat relationships, and demographic parameters throughout the Klamath-Siskiyou Bioregion in order to inform managers about important bird habitats and the effects of resource management practices on birds. Results from these efforts, in combination with our partners, inform bird conservation locally, regionally, and at the national and international levels. In 2009, KBO will continue working with our partners to maintain this long-term monitoring program contributing towards implementing our mission to advance bird and habitat conservation through science, education, and effective partnerships.

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Table 1a. List of Focal Species from Partners in Flight Landbird Conservation Plans for coniferous forests of western Oregon and Washington (Altman 1999) and east-slope of the Cascade Mountains in Oregon and Washington (Altman 2000) for which the Klamath Bird Observatory gathers distribution, abundance, and demographic information at constant effort mist netting stations in southern Oregon and northern California.

Band-tailed Pigeon	Pygmy Nuthatch
Flammulated Owl	Brown Creeper
Vaux's Swift	Winter Wren
Rufous Hummingbird	Hermit Thrush
Lewis' Woodpecker	Varied Thrush
Williamson's Sapsucker	Orange-crowned Warbler
White-headed Woodpecker	Black-throated Gray Warbler
Pileated Woodpecker	Hermit Warbler
Olive-sided Flycatcher	Wilson's Warbler
Hammond's Flycatcher	Chipping Sparrow
Pacific-Slope Flycatcher	Lincoln's Sparrow
Hutton's Vireo	

Table 1b. List of Partners in Flight Watch List and Stewardship Species occurring in the Pacific (5) and Intermountain West (9) Avifaunal Biomes for which the Klamath Bird Observatory gathers distribution, abundance, and demographic information at constant effort mist netting stations in southern Oregon and northern California [\*Watch List Species; \*\*Stewardship Species] (Rich et al. 2004).

Flammulated Owl*	Steller's Jay**
Calliope Hummingbird*	Western Scrub-Jay**
Allen's Hummingbird*	Chestnut-backed Chickadee**
Rufous Hummingbird*	Oak Titmouse*
Lewis' Woodpecker*	Winter Wren**
Red-breasted Sapsucker**	Varied Thrush**
Williamson's Sapsucker**	Wrentit*
White-headed Woodpecker*	Black-throated Gray Warbler**
Olive-sided Flycatcher**	Hermit Warbler*
Willow Flycatcher*	Green-tailed Towhee**
Dusky Flycatcher**	Fox Sparrow**
Pacific-slope (Western) Flycatcher**	Golden-crowned Sparrow**
Gray Flycatcher**	

Table 2. List of 2008 Klamath Bird Observatory constant effort monitoring station (CES), and public demonstration (demo) sites by station code, ownership, and location [USFS = U.S. Department of Agriculture U.S. Forest Service; BLM = U.S. Department of Interior Bureau of Land Management; USFWS = U.S. Department of Interior U.S. Fish and Wildlife Service; NPS = U.S. Department of Interior National Park Service.]

Station Name	Code	Ownership	Latitude	Longitude	Location
Sevenmile Guard Station CES	7MIL	USFS, Winema NF	42° 42' 18"	122° 04' 26"	Sevenmile Creek, Winema NF, 6 miles W Fort Klamath, Klamath Co., Oregon
Antelope Creek CES	ANT1	USFS, Klamath NF	41° 29' 32"	121° 56' 21"	Antelope Creek, 7 miles SSW of Tennant, Siskiyou Co., California
Ashland Watershed CES	ASWA	USFS, Rogue River NF	42° 06' 47"	122° 39' 40"	Ashland Creek watershed, 10.9 miles SE Ashland, Oregon
Rocky Point Cabin CES	CABN	USFWS, Upper Klamath Lake NWR	42° 29' 49"	122° 04' 47"	Rocky Point, Pelican Bay, 23.0 miles NW of Klamath Falls, Klamath Co., Oregon
Gerber Reservoir CES	GERB	BLM, Lakeview District	42° 10' 26"	121° 01' 50"	Barnes Valley Creek, SE Gerber Reservoir, 15.5 miles S of Bly, Klamath Co., Oregon
Horse Creek Meadow CES	HCME	USFS, Rogue River NF	42° 23' 00"	123° 40' 00"	Horse Creek Meadow, 13.0 miles W of Merlin, Josephine Co., Oregon
Jefferson Nature Center CES	JENC	City of Medford, Jefferson Nature Center	42° 17' 59"	122° 50' 28"	Jefferson Nature Center, 2.0 miles N of Phoenix, Jackson Co., Oregon
Johnson Creek CES	JOHN	BLM, Ashland Resource Area	42° 14' 53"	122° 14' 02"	Johnson Creek, 19.2 miles ENE of Ashland, Klamath Co., Oregon
North Mountain Park CES	NMTP	City of Ashland, Dept. Parks & Recreation	42° 12' 08"	122° 41' 51"	North Mountain Park, Ashland, Jackson Co., Oregon
Odessa Creek CES	ODES	USFS, Winema NF	42° 25' 45"	122° 03' 28"	Odessa Creek Campground, 19.6 miles NW of Klamath Falls, Klamath Co., Oregon
Oregon Caves CES	ORCA	NPS, Oregon Caves NM	42° 05' 37"	123° 23' 47"	Oregon Caves NM, 14.0 miles SE of Cave Junction, Josephine Co., Oregon
Quines Creek CES	QUIC	BLM, Medford District	42° 44' 00"	123° 16' 00"	Quines Creek, 15 miles SSE of Canyonville, Douglas Co., Oregon
Frain Ranch Campground CES	TOPS	BLM, Lakeview District	42° 01' 30"	122° 06' 05"	Klamath River at Frain Ranch Campground, 10.2 miles NW of Dorris, CA, Klamath Co., C
Veteran's Park demo	VET1	City of Klamath Falls	42° 13' 08"	121° 47' 17"	Veteran's Park, north shore Lake Ewauna, Klamath Falls, Klamath Co., Oregon
Wildlife Images CES	WIIM	BLM, Medford District	42° 29' 25"	123° 28' 48"	Rogue River at Wildlife Images, 3.5 miles SW of Merlin, Josephine Co., Oregon
Williamson River CES	WILL	USFS, Winema NF	42° 39' 22"	121° 51' 08"	Williamson River Campground, 5.5 miles NNE of Chiloquin, Klamath Co., Oregon
Willow Wind CES	WIWI	Ashland School District	42° 11' 59"	122° 41' 26"	Willow Wind Community Learning Center, Ashland, Jackson Co., Oregon
Wood River Wetland CES	WOOD	BLM, Lakeview District	42° 35' 12"	121° 55' 48"	Wood River Wetland Area, Agency Lake, 3.3 miles W of Chiloquin, Klamath Co., Oregon

*Summary Report - Klamath Bird Observatory's 2008 Long-term Constant-Effort Monitoring*

Table 3a. 2008 effort summary of Klamath Bird Observatory's 10 Eastside Cascades & Klamath Basin constant effort monitoring (CES) and public demonstration stations by site. [STATION (BLM = U.S. Department of Interior Bureau of Land Management, KFP = City of Klamath Falls Parks Department, USFS = U.S. Department of Agriculture Forest Service, USFWS = U.S. Department of Interior Fish and Wildlife Service); EFFORTS = number of visits to each site; RECAP, NEW, UNBANDED and TOTAL = number of previously banded birds, newly banded birds, birds released without being banded, and total number of birds captured respectively; AVERAGE SPECIES RICHNESS = average number of species captured each day; SURVEYS = number of 20-minute area search surveys conducted; NET HOURS = number of 12 m nets operated x time operated in hours; PERSON DAYS = number of person days spent; AVERAGE DAILY CAPTURES = average total captures per day; AVERAGE DAILY RECAPS = average recaptures per day; CAPTURES PER NET HOUR = average of total captures per net hour]

STATION CODE	STATION (Ownership)	EFFORTS	RECAP	NEW	UNBANDED	TOTAL	NET HOURS	AVERAGE SPECIES RICHNESS	AVERAGE DAILY CAPTURES	AVERAGE DAILY RECAPS	CAPTURES PER NET HOUR	SURVEYS	PERSON DAYS
7MIL	Sevenmile Guard Station CES (USFS)	16	103	474	28	605	910.5	12.0	37.8	6.4	0.66	28	59
ANT1	Antelope Creek ROI (USFS)	13	74	465	42	581	647.2	15.3	44.7	5.7	0.90	26	42
CABN	Rocky Point Cabin CES (USFWS)	27	112	1281	31	1424	1471.1	15.1	52.7	4.1	0.97	55	99
GERB	Gerber Reservoir CES (BLM)	16	29	288	16	333	801.7	9.1	20.8	1.8	0.42	31	47
JOHN	Johnson Creek CES (BLM)	14	38	432	25	495	797.3	12.7	35.4	2.7	0.62	26	47
ODES	Odessa Creek Campground CES (USFS)	16	103	606	24	733	779.4	14.6	45.8	6.4	0.94	29	55
TOPS	Frain Ranch Campground CES (BLM)	16	111	578	47	736	766.6	13.7	46.0	6.9	0.96	32	55
VET1	Veteran's Park public demonstration (KFP)	1	1	19	3	23	13.5	8.0	23.0	1.0	1.71	0	3
WILL	Williamson River Campground CES (USFS)	16	93	440	25	558	867.8	12.5	34.9	5.8	0.64	28	48
WOOD	Wood River Wetland CES (BLM)	16	121	481	31	633	794.8	11.2	39.6	7.6	0.80	33	47
<b>Eastside Cascades Range &amp; Klamath Basin Totals</b>		<b>151</b>	<b>785</b>	<b>5,064</b>	<b>272</b>	<b>6,121</b>	<b>7,849.7</b>					<b>288</b>	<b>502</b>
<b>Westside Cascades &amp; Klamath Ranges Totals (Table 4a)</b>		<b>171</b>	<b>920</b>	<b>3,778</b>	<b>282</b>	<b>4,980</b>	<b>8,689.7</b>					<b>353</b>	<b>549</b>
<b>2008 Grand Totals</b>		<b>322</b>	<b>1,705</b>	<b>8,842</b>	<b>554</b>	<b>11,101</b>	<b>16,539.4</b>					<b>641</b>	<b>1051</b>

*Summary Report - Klamath Bird Observatory's 2008 Long-term Constant-Effort Monitoring*

Table 3b. 2008 effort summary of Klamath Bird Observatory's 10 Eastside Cascades & Klamath Basin constant effort monitoring (CES) and public demonstration stations by site operated during the breeding season (mid-May through late-August). [STATION (BLM = U.S. Department of Interior Bureau of Land Management, KFP = City of Klamath Falls Parks Department, USFS = U.S. Department of Agriculture Forest Service, USFWS = U.S. Department of Interior Fish and Wildlife Service); EFFORTS = number of visits to each site; RECAP, NEW, UNBANDED and TOTAL = number of previously banded birds, newly banded birds, birds released without being banded, and total number of birds captured respectively; AVERAGE SPECIES RICHNESS = average number of species captured each day; SURVEYS = number of 20-minute area search surveys conducted; NET HOURS = number of 12 m nets operated x time operated in hours; PERSON DAYS = number of person days spent; AVERAGE DAILY CAPTURES = average total captures per day; AVERAGE DAILY RECAPS = average recaptures per day; CAPTURES PER NET HOUR = average of total captures per net hour]

							AVERAGE	AVERAGE	AVERAGE	CAPTURES			
STATION						NET	SPECIES	DAILY	DAILY	PER		PERSON	
CODE	STATION	EFFORTS	RECAP	NEW	UNBANDED	TOTAL	HOURS	RICHNESS	CAPTURES	RECAPS	NET HOUR	SURVEYS	DAYS
7MIL	Sevenmile Guard Station CES (USFS)	10	65	238	17	320	567.5	11.4	32.00	6.50	0.56	17	41
ANT1	Antelope Creek CES (USFS)	8	58	322	37	417	402.2	17.4	52.1	7.3	1.04	16	27
CABN	Rocky Point Cabin CES (USFWS)	10	54	342	13	409	536.1	14.9	40.90	5.40	0.76	23	38
GERB	Gerber Reservoir CES (BLM)	10	19	93	13	125	501.7	6.7	12.50	1.90	0.25	19	31
JOHN	Johnson Creek CES (BLM)	8	23	177	17	217	468.0	11.1	27.13	2.88	0.46	15	27
ODES	Odessa Creek Campground CES (USFS)	10	64	363	17	444	479.5	14.0	44.40	6.40	0.93	17	39
TOPS	Frain Ranch Campground CES (BLM)	10	95	370	28	493	473.2	14.8	49.30	9.50	1.04	20	37
VET1	Veteran's Park public demonstration (KFP)	1	1	19	3	23	13.5	8.0	23.00	1.00	1.71	0	3
WILL	Williamson River Campground CES (USFS)	10	69	195	21	285	542.8	11.9	28.50	6.90	0.53	17	32
WOOD	Wood River Wetland CES (BLM)	10	113	248	20	381	495.8	11.6	38.10	11.30	0.77	21	30
Eastside Cascades Range & Klamath Basin Totals		87	561	2,367	186	3,114	4,480.2					165	305
Westside Cascades & Klamath Ranges Totals (Table 4b)		84	309	1,326	139	1,774	3,835.7					163	256
Breeding Season Totals		171	870	3,693	325	4,888	8,315.9					328	561



*Summary Report - Klamath Bird Observatory's 2008 Long-term Constant-Effort Monitoring*

Table 3c. 2008 effort summary of Klamath Bird Observatory's nine Eastside Cascades & Klamath Basin constant effort monitoring (CES) stations by site during the fall migration season (late-August through late-October). [STATION (BLM = U.S. Department of Interior Bureau of Land Management, USFS = U.S. Department of Agriculture Forest Service, USFWS = U.S. Department of Interior Fish and Wildlife Service); EFFORTS = number of visits to each site; RECAP, NEW, UNBANDED and TOTAL = number of previously banded birds, newly banded birds, birds released without being banded, and total number of birds captured respectively; AVERAGE SPECIES RICHNESS = average number of species captured each day; SURVEYS = number of 20-minute area search surveys conducted; NET HOURS = number of 12 m nets operated x time operated in hours; PERSON DAYS = number of person days spent; AVERAGE DAILY CAPTURES = average total captures per day; AVERAGE DAILY RECAPS = average recaptures per day; CAPTURES PER NET HOUR = average of total captures per net hour]

STATION CODE	STATION	EFFORTS	RECAP	NEW	UNBANDED	TOTAL	NET HOURS	AVERAGE SPECIES RICHNESS	AVERAGE DAILY CAPTURES	AVERAGE DAILY RECAPS	CAPTURES PER NET HOUR	SURVEYS	PERSON DAYS
7MIL	Sevenmile Guard Station CES (USFS)	6	38	236	11	285	343.0	12.7	47.50	6.33	0.83	11	18
ANT1	Antelope Creek CES (USFS)	5	16	143	5	164	245.0	13.2	32.80	3.20	0.67	10	15
CABN	Rocky Point Cabin CES (USFWS)	17	58	939	18	1015	935.0	15.3	59.71	3.41	1.09	32	61
GERB	Gerber Reservoir CES (BLM)	6	10	195	3	208	300.0	11.5	34.67	1.67	0.69	12	16
JOHN	Johnson Creek CES (BLM)	6	15	255	8	278	329.3	14.3	46.33	2.50	0.84	11	20
ODES	Odessa Creek Campground CES (USFS)	6	39	243	7	289	299.9	15.2	48.17	6.50	0.96	12	16
TOPS	Frain Ranch Campground CES (BLM)	6	16	208	19	243	293.3	12.7	40.50	2.67	0.83	12	18
WILL	Williamson River Campground CES (USFS)	6	24	245	4	273	325.0	13.2	45.50	4.00	0.84	11	16
WOOD	Wood River Wetland CES (BLM)	6	8	233	11	252	299.0	10.8	42.00	1.33	0.84	12	17
<b>Eastside Cascades Range &amp; Klamath Basin Totals</b>		<b>64</b>	<b>224</b>	<b>2,697</b>	<b>86</b>	<b>3,007</b>	<b>3,369.5</b>					<b>123</b>	<b>197</b>
<b>Westside Cascades &amp; Klamath Ranges Totals (Table 4c)</b>		<b>76</b>	<b>435</b>	<b>1,858</b>	<b>94</b>	<b>2,387</b>	<b>3,806.7</b>					<b>145</b>	<b>223</b>
<b>Fall Migration Season Totals</b>		<b>140</b>	<b>659</b>	<b>4,555</b>	<b>180</b>	<b>5,394</b>	<b>7,176.2</b>					<b>268</b>	<b>420</b>

*Summary Report - Klamath Bird Observatory's 2008 Long-term Constant-Effort Monitoring*

Table 4a. 2008 effort summary of Klamath Bird Observatory's eight Westside Cascades & Klamath Ranges constant-effort monitoring (CES) stations by site. Totals for the JENC and WIWI stations include efforts outside the breeding and fall migration seasons (January through April & November through December). [STATION (BLM = U.S. Department of Interior Bureau of Land Management, ACP = City of Ashland Department of Parks and Recreation, ASD = Ashland School District, COM = City of Medford, NPS = U.S. Department of Interior National Park Service, USFS = U.S. Department of Agriculture Forest Service); EFFORTS = number of visits to each site; RECAP, NEW, UNBANDED and TOTAL = number of previously banded birds, newly banded birds, birds released without being banded, and total number of birds captured respectively; AVERAGE SPECIES RICHNESS = average number of species captured each day; SURVEYS = number of 20-minute area search surveys conducted; NET HOURS = number of 12 m nets operated x time operated in hours; PERSON DAYS = number of person days spent; AVERAGE DAILY CAPTURES = average total captures per day; AVERAGE DAILY RECAPS = average recaptures per day; CAPTURES PER NET HOUR = average of total captures per net hour]

STATION CODE	STATION (Ownership)	EFFORTS	RECAP	NEW	UNBANDED	TOTAL	NET HOURS	AVERAGE SPECIES RICHNESS	AVERAGE DAILY CAPTURES	AVERAGE DAILY RECAPS	CAPTURES PER NET HOUR	SURVEYS	PERSON DAYS
ASWA	Ashland Watershed CES (USFS)	15	68	394	37	499	747.9	10.6	33.3	4.5	0.67	29	46
HCME	Horse Creek Meadow CES (USFS)	16	60	420	24	504	385.8	11.1	31.5	3.8	1.31	30	39
JENC	Jefferson Nature Center CES (COM)	29	94	469	34	597	1246.0	10.1	20.6	3.2	0.48	58	102
NMTP	North Mountain Park CES (ACP)	20	76	278	19	373	915.3	9.0	18.2	3.9	0.42	39	52
ORCA	Oregon Caves National Monument CES (NPS)	15	28	198	12	238	749.7	6.9	15.9	1.9	0.32	29	39
QUIC	Quines Creek CES (BLM)	23	104	329	23	456	1098.5	10.1	19.8	4.5	0.42	44	61
WIIM	Wildlife Images CES (BLM)	30	257	903	60	1220	1742.7	11.5	40.7	8.6	0.70	53	87
WIWI	Willow Wind CES (ASD)	38	233	787	73	1093	1803.9	9.4	28.8	6.1	0.61	71	123
<b>Westside Cascades &amp; Klamath Ranges Totals</b>		<b>171</b>	<b>920</b>	<b>3,778</b>	<b>282</b>	<b>4,980</b>	<b>8,689.7</b>					<b>353</b>	<b>549</b>
<b>Eastside Cascades Range &amp; Klamath Basin Totals (Table 3a)</b>		<b>151</b>	<b>785</b>	<b>5,064</b>	<b>272</b>	<b>6,121</b>	<b>7,849.7</b>					<b>288</b>	<b>502</b>
<b>2008 Grand Totals</b>		<b>322</b>	<b>1,705</b>	<b>8,842</b>	<b>554</b>	<b>11,101</b>	<b>16,539.4</b>					<b>641</b>	<b>1,051</b>

Table 4b. 2008 effort summary of Klamath Bird Observatory's eight Westside Cascades & Klamath Ranges constant-effort monitoring (CES) stations by site for the breeding season (mid-May through late-August). [STATION (BLM = U.S. Department of Interior Bureau of Land Management, ACP = City of Ashland Department of Parks and Recreation, ASD = Ashland School District, COM = City of Medford, NPS = U.S. Department of Interior National Park Service, USFS = U.S. Department of Agriculture Forest Service); EFFORTS = number of visits to each site; RECAP, NEW, UNBANDED and TOTAL = number of previously banded birds, newly banded birds, birds released without being banded, and total number of birds captured respectively; AVERAGE SPECIES RICHNESS = average number of species captured each day; SURVEYS = number of 20-minute area search surveys conducted; NET HOURS = number of 12 m nets operated x time operated in hours; PERSON DAYS = number of person days spent; AVERAGE DAILY CAPTURES = average total captures per day; AVERAGE DAILY RECAPS = average recaptures per day; CAPTURES PER NET HOUR = average of total captures per net hour]

STATION CODE	STATION	EFFORTS	RECAP	NEW	UNBANDED	TOTAL	NET HOURS	AVERAGE SPECIES RICHNESS	AVERAGE DAILY CAPTURES	AVERAGE DAILY RECAPS	CAPTURES PER NET HOUR	SURVEYS	PERSON DAYS
ASWA	Ashland Watershed CES (USFS)	9	37	181	33	251	447.9	10.7	27.89	4.11	0.56	18	29
HCME	Horse Creek Meadow CES (USFS)	10	38	195	16	249	240.8	10.4	24.90	3.80	1.03	19	23
JENC	Jefferson Nature Center CES (COM)	13	40	182	14	236	564.1	8.0	18.15	3.08	0.42	27	53
NMTP	North Mountain Park CES (ACP)	11	31	107	10	148	479.6	6.4	13.45	2.82	0.31	22	31
ORCA	Oregon Caves National Monument CES (NPS)	9	19	99	8	126	449.7	6.2	14.00	2.11	0.28	17	23
QUIC	Quines Creek CES (BLM)	11	53	166	13	232	498.5	10.7	21.09	4.82	0.47	20	31
WIIM	Wildlife Images CES (BLM)	10	59	248	26	333	570.8	11.2	33.30	5.90	0.58	18	30
WIWI	Willow Wind CES (ASD)	11	32	148	19	199	584.3	6.8	18.09	2.91	0.34	22	36
<b>Westside Cascades &amp; Klamath Ranges Totals</b>		<b>84</b>	<b>309</b>	<b>1,326</b>	<b>139</b>	<b>1,774</b>	<b>3,835.7</b>					<b>163</b>	<b>256</b>
<b>Eastside Cascades Range &amp; Klamath Basin Totals (Table 3b)</b>		<b>87</b>	<b>561</b>	<b>2,367</b>	<b>186</b>	<b>3,114</b>	<b>4,480.2</b>					<b>165</b>	<b>305</b>
<b>Breeding Season Totals</b>		<b>171</b>	<b>870</b>	<b>3,693</b>	<b>325</b>	<b>4,888</b>	<b>8,315.9</b>					<b>328</b>	<b>561</b>

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Table 4c. 2008 effort summary of Klamath Bird Observatory's eight Westside Cascades & Klamath Ranges constant effort monitoring (CES) stations by site for the fall migration season (late-August through late-October). [STATION (BLM = U.S. Department of Interior Bureau of Land Management, ACP = City of Ashland Department of Parks and Recreation, ASD = Ashland School District, COM = City of Medford, NPS = U.S. Department of Interior National Park Service, USFS = U.S. Department of Agriculture Forest Service); EFFORTS = number of visits to each site; RECAP, NEW, UNBANDED and TOTAL = number of previously banded birds, newly banded birds, birds released without being banded, and total number of birds captured respectively; AVERAGE SPECIES RICHNESS = average number of species captured each day; SURVEYS = number of 20-minute area search surveys conducted; NET HOURS = number of 12 m nets operated x time operated in hours; PERSON DAYS = number of person days spent; AVERAGE DAILY CAPTURES = average total captures per day; AVERAGE DAILY RECAPS = average recaptures per day; CAPTURES PER NET HOUR = average of total captures per net hour]

STATION CODE	STATION	EFFORTS	RECAP	NEW	UNBANDED	TOTAL	NET HOURS	AVERAGE SPECIES RICHNESS	AVERAGE DAILY CAPTURES	AVERAGE DAILY RECAPS	CAPTURES PER NET HOUR	SURVEYS	PERSON DAYS
ASWA	Ashland Watershed CES (USFS)	6	31	213	4	248	300.0	10.5	41.33	5.17	0.83	11	17
HCME	Horse Creek Meadow CES (USFS)	6	22	225	8	255	145.0	11.8	42.50	3.67	1.76	11	16
JENC	Jefferson Nature Center CES (COM)	9	32	118	4	154	441.5	13.2	17.11	3.56	0.35	18	35
NMTP	North Mountain Park CES (ACP)	9	45	171	9	225	435.7	11.6	25.00	5.00	0.52	17	21
ORCA	Oregon Caves National Monument CES (NPS)	6	9	99	4	112	300.0	7.5	18.67	1.50	0.37	12	16
QUIC	Quines Creek CES (BLM)	12	51	163	10	224	600.0	9.4	18.67	4.25	0.37	24	30
WIIM	Wildlife Images CES (BLM)	20	198	655	34	887	1171.8	11.8	44.35	9.90	0.76	35	57
WIWI	Willow Wind CES (ASD)	8	47	214	21	282	412.7	12.4	35.25	5.88	0.68	17	31
<b>Westside Cascades &amp; Klamath Ranges Totals</b>		<b>76</b>	<b>435</b>	<b>1,858</b>	<b>94</b>	<b>2,387</b>	<b>3,806.7</b>					<b>145</b>	<b>223</b>
<b>Eastside Cascades Range &amp; Klamath Basin Totals (Table 3c)</b>		<b>64</b>	<b>224</b>	<b>2,697</b>	<b>86</b>	<b>3,007</b>	<b>3,369.5</b>					<b>123</b>	<b>197</b>
<b>Fall Migration Season Totals</b>		<b>140</b>	<b>659</b>	<b>4,555</b>	<b>180</b>	<b>5,394</b>	<b>7,176.2</b>					<b>268</b>	<b>420</b>

*Summary Report - Klamath Bird Observatory's 2008 Long-term Constant-Effort Monitoring*

Table 4d. 2008 effort summary of Klamath Bird Observatory's two Westside Cascades & Klamath Ranges constant-effort monitoring (CES) stations by site operated January-April and November-December, outside the breeding and fall migration seasons. [STATION (ASD = Ashland School District, COM = City of Medford); EFFORTS = number of visits to each site; RECAP, NEW, UNBANDED and TOTAL = number of previously banded birds, newly banded birds, birds released without being banded, and total number of birds captured respectively; AVERAGE SPECIES RICHNESS = average number of species captured each day; SURVEYS = number of 20-minute area search surveys conducted; NET HOURS = number of 12 m nets operated x time operated in hours; PERSON DAYS = number of person days spent; AVERAGE DAILY CAPTURES = average total captures per day; AVERAGE DAILY RECAPS = average recaptures per day; CAPTURES PER NET HOUR = average of total captures per net hour]

STATION CODE	STATION (Ownership)	EFFORTS	RECAP	NEW	UNBANDED	TOTAL	NET HOURS	AVERAGE SPECIES RICHNESS	AVERAGE DAILY CAPTURES	AVERAGE DAILY RECAPS	CAPTURES PER NET HOUR	SURVEYS	PERSON DAYS
JENC	Jefferson Nature Center CES (COM)	7	22	169	16	207	240.4	9.3	29.6	3.1	0.86	13	14
WIWI	Willow Wind CES (ASD)	19	154	425	33	612	806.9	9.0	32.2	8.1	0.76	32	56
<b>Outside Breeding and Fall Migration Seasons Totals</b>		<b>26</b>	<b>176</b>	<b>594</b>	<b>49</b>	<b>819</b>	<b>1047.3</b>					<b>45</b>	<b>70</b>